

CLAIMS

- 1 1. A method of forming a wear-resistant reinforcing coating on a substrate, the method
2 comprising:
- 3 (a) applying a liquid matrix material to the substrate;
- 4 (b) disposing reinforcing fibers in the liquid matrix material;
- 5 (c) placing particulate in contact with the liquid matrix material on an opposite
6 side of the fibers from the substrate; and
- 7 (d) hardening the liquid matrix material, thereby forming a composite of
8 reinforcing fibers in a matrix of the hardened liquid matrix material with the
9 wearing surface of particulate.
- 1 2. The method in accordance with claim 1, wherein the substrate is a solid substrate.

- 1 3. The method in accordance with claim 2, wherein the solid substrate is concrete.
- 1 4. The method in accordance with claim 2, wherein the solid substrate is asphalt
2 pavement.
- 1 5. The method in accordance with claim 2, wherein the solid substrate is wood.
- 1 6. The method in accordance with claim 2, wherein the solid substrate is fiberglass
2 composite.
- 1 7. The method in accordance with claim 2, wherein the solid substrate is metal.
- 1 8. The method in accordance with claim 2, wherein the solid substrate is modular bricks.
- 1 9. The method in accordance with claim 1, wherein the substrate is particulate.
- 1 10. The method in accordance with claim 9, wherein the particulate is soil.
- 1 11. The method in accordance with claim 9, wherein the particulate is sand.
- 1 12. The method in accordance with claim 9, wherein the particulate is gravel.

1 13. The method in accordance with claim 9, wherein the particulate is a combination
2 selected from the group of soil, sand and gravel.

1 14. The method in accordance with claim 1, further comprising the step of interposing a
2 membrane between the substrate and the liquid matrix material for preventing the liquid
3 matrix material from adhering substantially to the substrate.

1 15. The method in accordance with claim 14, wherein the membrane is plastic sheeting.

1 16. The method in accordance with claim 14, wherein the membrane is a release agent.

1 17. The method in accordance with claim 14, wherein the substrate is a solid substrate.

1 18. The method in accordance with claim 17, wherein the solid substrate is concrete.

1 19. The method in accordance with claim 17, wherein the solid substrate is asphalt
2 pavement.

1 20. The method in accordance with claim 17, wherein the solid substrate is wood.

1 21. The method in accordance with claim 17, wherein the solid substrate is fiberglass
2 composite.

1 22. The method in accordance with claim 17, wherein the solid substrate is metal.

1 23. The method in accordance with claim 17, wherein the solid substrate is modular
2 bricks.

1 24. The method in accordance with claim 14, wherein the substrate is particulate.

1 25. The method in accordance with claim 24, wherein the particulate is soil.

1 26. The method in accordance with claim 24, wherein the particulate is sand.

1 27. The method in accordance with claim 24, wherein the particulate is gravel.

1 28. The method in accordance with claim 24, wherein the particulate is a combination
2 selected from the group of soil, sand and gravel.

1 29. A wear-resistant reinforcing coating formed on a substrate, the coating comprising:

2 (a) a matrix adjacent the substrate;

3 (b) reinforcing fibers disposed in the matrix for reinforcing the matrix; and

4 (c) particulate adhered to the matrix on an opposite side of the fibers from the
5 substrate.

1 30. The wear-resistant reinforcing coating in accordance with claim 29, wherein the
2 substrate is a solid substrate.

1 31. The wear-resistant reinforcing coating in accordance with claim 29, wherein the
2 substrate is particulate.

1 32. The wear-resistant reinforcing coating in accordance with claim 29, further
2 comprising a membrane interposed between the substrate and the matrix, thereby
3 preventing adhesion of the matrix to the substrate.

1 33. The wear-resistant reinforcing coating in accordance with claim 32, wherein the
2 substrate is a solid substrate.

1 34. The wear-resistant reinforcing coating in accordance with claim 32, wherein the
2 substrate is particulate.

1 35. A method of forming a wear-resistant reinforcing coating on a solid substrate, the
2 method comprising:

- 3 (a) applying a liquid matrix material to the substrate;
4 (b) interposing a membrane between the substrate and the liquid matrix material
5 for preventing the liquid matrix material from adhering substantially to the solid
6 substrate;
7 (c) disposing reinforcing fibers in the liquid matrix material;
8 (d) placing particulate in contact with the liquid matrix material on an opposite
9 side of the fibers from the substrate; and
10 (e) hardening the liquid matrix material, thereby forming a composite of
11 reinforcing fibers in a matrix of the hardened liquid matrix material with the
12 wearing surface of particulate.

1 36. A wear-resistant reinforcing coating formed on a solid substrate, the coating
2 comprising:

- 3 (a) a matrix adjacent the substrate;
4 (b) a membrane interposed between the substrate and the matrix, thereby
5 preventing adhesion of the matrix to the substrate;
6 (c) reinforcing fibers disposed in the matrix for reinforcing the matrix; and
7 (d) particulate adhered to the matrix on an opposite side of the fibers from the
8 substrate.

- 1 37. A method of forming a reinforced floor having a substrate, the method comprising:
- 2 (a) applying a liquid matrix material to the substrate;
- 3 (b) disposing reinforcing fibers in the liquid matrix material;
- 4 (c) hardening the liquid matrix material, thereby forming a composite of
- 5 reinforcing fibers in a matrix of hardened liquid matrix material, wherein an
- 6 exposed surface of the reinforcement is unsuitable for foot traffic; and
- 7 (d) mounting a layer of rigid flooring material to said substrate above said
- 8 composite of reinforcing fibers, said layer of flooring material having a wearing
- 9 surface that is suitable for traffic.
- 1 38. A reinforced floor having a planar substrate, the reinforced floor comprising:
- 2 (a) a hardened, planar matrix mounted to the substrate;
- 3 (b) reinforcing fibers disposed in the matrix;
- 4 (c) a planar layer of rigid flooring material mounted to the substrate above the
- 5 reinforcing fibers, said layer of flooring material having a planar wearing surface
- 6 that is suitable for traffic.
- 1 39. A modular flooring unit of a discrete size and weight that can be lifted by a human,
- 2 the flooring unit comprising:
- 3 (a) a planar matrix;

4 (b) reinforcing fibers embedded in the matrix for reinforcing the matrix;

5 (c) particulate mounted to a major surface of the matrix.

1 40. The flooring unit in accordance with claim 39, wherein the particulate mounted to
2 the matrix forms the traffic-bearing surface of the flooring unit.

1 41. A method of forming a modular flooring unit of a size and weight that can be lifted
2 by a human, the method comprising:

3 (a) placing a liquid matrix material in a receptacle;

4 (b) disposing reinforcing fibers in the liquid matrix material;

5 (c) placing particulate in contact with the liquid matrix material on an opposite
6 side of the fibers from the substrate; and

7 (d) hardening the liquid matrix material, thereby forming a composite of
8 reinforcing fibers in a matrix of the hardened liquid matrix material with a traffic-
9 bearing surface of particulate.

1 42. A method of forming a wear-resistant reinforcing coating on a substrate, the method
2 comprising:

3 (a) aligning a composite with the substrate, the composite comprising a hardened
4 matrix embedded with reinforcing fibers;

5 (b) applying an adhesive between the composite and the substrate;

- 6 (c) forcing the composite against the substrate with the adhesive in a layer
- 7 interposed between the composite and the substrate;
- 8 (d) applying adhesive to the composite on a side of the composite opposite the
- 9 substrate;
- 10 (e) placing particulate in contact with the adhesive; and
- 11 (f) hardening the adhesive, thereby forming a wearing surface of particulate.

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